

Visual mercury inspection procedure
TT 6048

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Visual mercury inspection procedure

Overview

Background

Nicor Gas has initiated a widespread campaign to inspect the homes of our customers for the presence of mercury potentially spilled during the removal of old-style mercury regulators. This is being done in an effort to put the safety of our customers first and address customer concerns in an active, responsible manner.

Elimination criteria

If the customer's home meets any of the following criteria, it need not be inspected for the presence of mercury inside the home.

- The home was built after 1961 (homes built after 1961 were not equipped with mercury regulators).
- The home has a meter with an old-style mercury regulator located outside of the home
- The home is currently located in Nicor's low-pressure distribution system area or was converted from a low-pressure system after 1961.
- · A pin-off tee is present outside of the customer's home.

Your role

As a visual inspector, you will be the important first link in the mercury detection chain. Your responsibilities will include:

- Establishing the initial contact between Nicor Gas and the customer.
- Providing the customer with information about Nicor's pro-active stance on the mercury issue.
- Addressing customer concerns in a courteous manner.
- Informing the customer of the resources Nicor has made available to them should they have questions/concerns.
- Performing a visual inspection for the presence of mercury in the customer's home.
- Applying a mercury suppressant to any elemental mercury that you observe.
- Completing paperwork reflecting your findings in the customer's home.

Your team ...

Your team will consist of 10-12 visual inspectors and one team leader. The team leader is typically an employee with considerable field experience that will inform you of team plans, schedules, etc. The team leader should be your first point of contact if you have any questions, concerns or are ever unsure of the proper course of action to take while in the field.

Customer resources

Nicor Gas mercury information line:

1-888-288-8110

Special mercury information section on the Nicor website:

www.nicor.com

Illinois Department of Public Health consumer information line:

1-888-522-1282

Mercury information

What is mercury?

- Mercury is a metal that occurs naturally in small amounts in the environment.
- Elemental (or "metallic") mercury is a shiny, silver-white, odorless liquid.
- When vaporized, mercury becomes a colorless, odorless gas.
- Mercury is unique to most metals in that at room temperature it is a liquid that vaporizes slowly.

What is mercury used for?

- Mercury is used in barometers, blood pressure instruments, thermometers, and other pressure-sensing instruments.
- Batteries containing mercury are used in some small electronic devices.
- Mercury is also used in some fluorescent bulbs, thermostats & light switches, motion picture projection and the production of some medications.

Is mercury dangerous?

- Health problems caused by mercury depend on how much of it has entered the body, how it entered the body, the length of exposure and how the body responds to it.
- Children are more susceptible to mercury poisoning than adults are.
- Exposure to even small amounts of mercury over extended periods of time may cause negative health effects including damage to the brain, kidneys, lungs and the developing fetus.
- When exposure to mercury stops, most symptoms usually go away;
 however, at very high levels effects on the brain and nervous system may be permanent.
- Please recognize that you are not expected to be a health expert.
 Customer health questions should be referred to health professionals.

How does mercury exposure occur?

- Mercury exposure occurs primarily through breathing mercury vapors but may also occur through direct skin contact or by eating food or drinking water that has been contaminated with mercury.
- If mercury is swallowed, very little is absorbed. Most of the mercury is eliminated through the digestive tract.

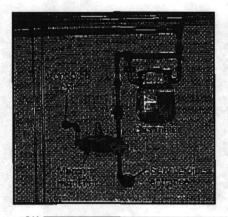
Mercury regulators

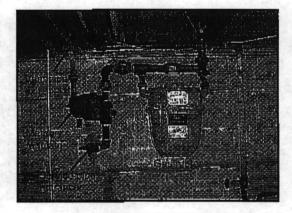
Summary

Prior to 1961, meter sets using mercury regulators were installed in the homes of many Nicor Gas customers. These regulators each contained approximately 2 teaspoons of liquid mercury in a small, sealed cup. As technology has progressed, other types of regulators (called "dry seal" regulators) have been developed that do not contain mercury. Over the past 40 years, Nicor Gas has been systematically replacing the older mercury containing regulators located inside customer homes with newer dry seal regulators while also relocating the meter sets outside. It should be noted that some customer homes are still equipped with inside meter sets that use mercury regulators.

Meter set with mercury regulator

The pictures below show examples of inside meter sets with mercury regulators. Notice that all mercury regulators are installed horizontally.





Mercury regulator examples

The pictures below show two common examples of mercury regulator models that you may encounter while performing visual inspections in the field.



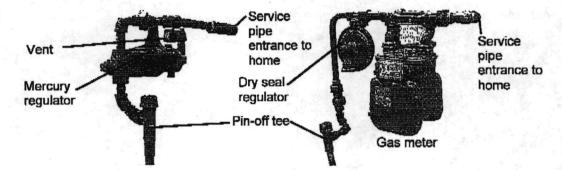
Mercury is contained within boxed area of each regulator



Natural gas equipment installations

Pin-off tees

- Pin-off tees are an older type of service valve.
- Removing the cap from a pin-off tee reveals a stem that can be turned, controlling the amount of gas allowed to flow through the pin-off tee (similar to the way a needle valve works).
- Many homes were formerly equipped with a mercury regulator outside
 the home and a gas meter inside. These outside mercury regulators
 were ALWAYS installed with a pin-off tee. As the mercury regulators
 were replaced with dry seal regulators and the gas meters were relocated
 outside, some pin-off tees were re-used while others were abandoned.
 In either case the presence of a pin-off tee indicates that the home is at
 little risk for having inside mercury contamination.

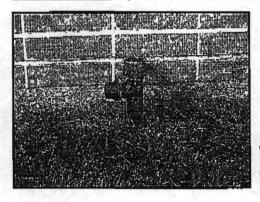


Original setup

- Piping branches off from the pinoff tee to the regulator inlet.
- Piping runs from the regulator outlet, through the service pipe entrance, to the gas meter located inside the home.

Re-used pin-off tee

- The mercury regulator is replaced with a dry seal regulator.
- The gas meter is re-located outside the home.
- The service pipe entrance is reused for the fuel line into the home.



Abandoned pin-off tees are often capped off like the one to the left.

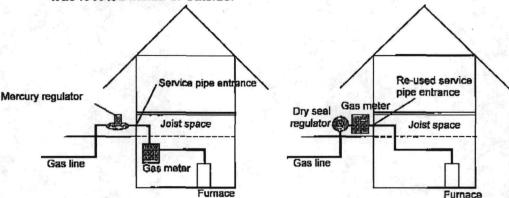
Natural gas equipment installations, continued

Inside vs. outside meter sets

- The greatest possibility of mercury contamination (and Nicor's primary area of concern) exists if the customer's home previously had a mercury regulator installed inside the home and currently has a non-mercury regulator installed outside the home.
- As mentioned earlier, if a customer's home currently has or has ever had a mercury regulator installed outside of the home there is minimal risk for the presence of mercury inside the home.

How do you know the difference?

Identifying the original gas equipment setup based on information you can gather from the current setup may allow you to determine if the home was ever equipped with a mercury regulator as well as whether that regulator was located inside or outside.



Original setup 1	New setup
 The gas line enters the home above ground level (typically in the joist space between the top of the foundation and the first floor). The mercury regulator is located outside of the home while the gas meter is located inside. 	 The gas meter is moved outside and the mercury regulator is replaced with a dry seal regulator. The service pipe entrance is commonly re-used.

Clues for identifying this original setup

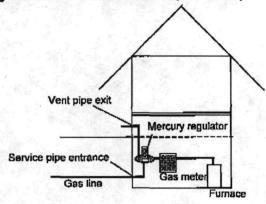
- There will probably not be any evidence of an old service entrance through the basement wall (foundation).
- A pin-off tee may be present near the current outside meter set.
- The fuel line from the home may go up into the joist space and exit the home above ground level before traveling to the outside meter set.
- The customer may be able to recall seeing the meter inside the home and the circular regulator outside the home.

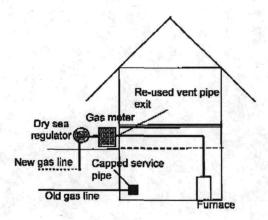
What does it mean?

- The home was probably equipped with an outside mercury regulator.
- There is an extremely low risk of mercury contamination within the home.

Natural gas equipment installations, continued

How do you know the difference? (continued)





Original setup 2

- The gas line enters the home through the basement wall (foundation).
- The regulator and the gas meter are both located inside the home.
- The regulator vents to atmosphere via a line exiting the home above ground level.

New setup

- The gas meter and mercury regulator are both moved outside of the home and the original service pipe is capped off or cut.
- A new gas line is installed.
- The mercury regulator is replaced with a dry seal regulator.
- The vent pipe exit is commonly re-used.

Clues for identifying this original setup

- You may find a capped off pipe sticking out from the basement wall (foundation).
- You may find a circular concrete patch in the foundation where the service pipe used to enter the home.
- The customer may be able to recall seeing the meter set and circular regulator near the old service entrance location.

What does it mean?

- The home was probably equipped with an inside mercury regulator.
- The area should be visually screened for mercury as well as screened with a meter for the presence of mercury vapor.

Natural gas equipment installations, continued

Finding the old meter set location

The following hints may help you identify the location of the old inside meter set in a customer's home.

- Most inside meter sets were located in a basement area of the home.
- If the home does not have a basement, the inside meter set may have been located in a closet, crawl space, utility room, garage, etc.
- The inside meter set may have been located in somewhat close proximity to the location of the current outside meter set because many crews made an effort to re-use existing piping holes when relocating the equipment outside.
- The inside meter set may have been enclosed in a cabinet or other small structure in order to conceal it from view.
- If you have no idea about where the inside meter set was located a search of the perimeter of the home's foundation may turn up evidence of an old service entrance point.
- If you are having trouble locating the old service entrance, try locating the
 fuel line from the fumace, hot water heater, etc. and back-tracing it
 through the home until you find the exit point.
- Drywall, brick, paneling, etc. may conceal the old service entrance point if the customer has re-finished the home since the meter set was relocated.
 In this case the area will have to be screened with an instrument for the presence of mercury vapor.

Beginning your inspection

Outside inspection

The table below lists steps to follow prior to establishing contact with the customer in order to make the inspection procedure run as smoothly as possible. Please be sensitive to entering private areas of the customer's yard that are not in close proximity to the front yard. Customer contact may be appropriate before entering these private areas.

Step	Action		
1	Examine the area surrounding the home for the presence of outside meter set.		
		Then	
	You are able to locate a meter set currently installed outside the customer's home.	 Note the location of the meter set as it may help you locate the old service entrance if the inspection moves inside. Move on to step 2. 	
	You are not able to locate a meter set currently installed outside the customer's home.	Move on to step 2.	
2	Examine the area surrounding the		
	presence of a pin-off tee (remember in use or it may be abandoned	ber, the pin-off tee may currently is	
	If	Then	
	You see a pin-off tee outside of the customer's home.	 Write "not involved" on your paperwork. Hang a pamphlet on the customer's front door. Move on to the next home. 	
	You do not see a pin-off tee outside of the customer's home.	Move on to step 3.	
L			

Beginning your inspection, continued

Outside inspection (continued)

Step	Action		
3	Examine the perimeter of the base of the home for the presence a vent pipe.		
	If	Then	
	You see a vent pipe sticking out of the home.	You can be reasonably sure that the home has had a mercury regulator located inside at some time. Move on to step 4 armed with that knowledge.	
	You do not see a vent pipe sticking out of the home.	Move on to step 4.	
4	Attempt to make contact with the	e customer (knock, doorbell, etc.	
	The customer answers the door.	Move on to the next procedure "Entering the home".	
	The customer does not answer the door.	 Write "CGI" (can't get in) on your paperwork. Hang a pamphlet and appointment card on the customer's front door. Move on to the next home. 	

Entering the home

Sample customer contact dialogue

The sample dialogue below may be useful as you make your initial contact with the customer.

Hello, my name is _____ and I'm from Nicor Gas. As you may have heard, we're visiting homes across our service territory to determine if there could be mercury present in your home as a result of work that may have been done with the natural gas regulator. We're checking all customers' homes that currently have an inside gas meter and regulator as well as those that have had a regulator moved from inside to outside.

We're trying to make sure that we reach all customers as quickly as possible. We'd like to ask you a few questions today and take a look at the location where your natural gas meter used to be when it was inside. We aren't an environmental inspection team, but we're visiting homes to do an initial check to determine the possibility of a problem at your home. Currently we are making an initial contact with our customers and prioritizing follow-up screenings.

We'll make an initial determination today, and depending on what we see, someone may be contacting you to schedule a time for another team to do a thorough screening of your home.

Do you have a moment to answer a couple of questions?

Inspection procedure

The table below lists the steps to follow after you have succeeded in making contact with the customer.

Step	Action		
1	Greet the customer using the sample dialogue.		
	1f	Then	
•	The customer is willing to answer a few questions.	Ask the customer: Do you know where your	
	answer a rew questions.	gas meter was located when it was inside your home?	
		Do you remember anything about the original meter and what it looked like or about the time when the workers came to move it outside?	
		 Move on to step 2 making use of any information supplied by the customer. 	
	The customer is not willing to answer a few questions.	 Move on to step 2 using the information gathered from your pre-inspection preparation. 	
	The customer does not wish for you to enter their home.	 Apologize to the customer for inconveniencing them. Write "CGI: refused entry" on your paperwork. 	
		Move on to the next home.	
	A minor answers the door.	 Ask to speak to an adult. If there is not one home leave a pamphlet and appointment card with the child. 	
		 Write "CGI: no adults" on your paperwork. 	
		Move on to the next home.	

Inspection procedure (continued)

Step	Action		
2	Ask the customer if their home has a basement (or look for a basement entrance if the customer is unwilling to answer questions).		
	The customer indicates that their home has a basement. You find a basement entrance. The customer indicates that their home does not have a basement. You are unable to find a basement entrance.	 Then Enter the basement. Put new disposable booties over your shoes at the bottom of the basement stairs. Move on to step 3. Search the home for a utility room, closet area, etc. Put new disposable booties over your shoes before entering the area (or room) where it is likely that the old service was located. Move on to step 3. 	
3	Search the area for evidence of the for visual confirmation of mercury holding a flashlight at an angle to looking for any small, shimmering if • You are able to locate the old service entrance. • You are unable to locate the old service entrance.	ne old service entrance, scanning in the home as you do so by surrounding surfaces and	

Inspection procedure (continued)

Step		tion
4	was previously equipped with an	
	If	Then
	 It is likely that the home was previously equipped with an inside mercury regulator. 	Move on to step 5.
	You see that the home still has an inside mercury regulator.	 Write "clear" on your paperwork. Inform the customer of your findings. Place disposable booties in "used" bag at same location you put them on. Move on to the next home.
	You are unable to determine whether the home was previously equipped with a mercury regulator.	 Write "clear" on your paperwork. Inform the customer of your findings. Place disposable booties in "used" bag at same location you put them on. Move on to the next home.

Inspection procedure (continued)

Step	Ac	tion
Step 5	Visually inspect the area surroun	ding the location of the old inside the of mercury. Be sure to closely floor as well as the area where Then Ensure that you have not tracked through any mercury. Cover the visible mercury with mercury suppressant powder. Remove all people from the area and close any doors and vents leading to it.
		Inform the customer of your findings, what you have done to suppress the mercury, and that a follow-up team will visit their home that same day.
		 Notify your team leader of the situation. Write "mercury detected" on your paperwork. Place disposable booties in "used" bag at same
		location you put them on. Move on to the next home.
	 You do not observe any substance that you suspect may be mercury. 	Move on to step 6.

Inspection procedure (continued)

Step		tion
6 6	Ask the customer of they have ever suspected may be mercury in the suspected may be mercury in the suspected may be mercury in the substance reports that they have observed any substance they believed to be mercury inside their home.	er observed anything that they
	The customer reports that they have never seen anything resembling mercury inside their home.	Move on to the next home. Move on to step 7.

Inspection procedure (continued)

Step		tion
7	Visually inspect the area for infonthat the area around the old servicustomer). Try to assess the amarea.	
	If	Then
	The area is typically used as a living or sleeping area. The family frequently spends time in the area.	 Write "clear: living quarters" on your paperwork. Inform the customer of your findings. Place disposable booties in "used" bag at same location you put them on. Move on to the next home.
	 The area is typically used as storage. The family does not typically spend time in the area. 	 Write "clear" on your paperwork. Inform the customer of your findings. Place disposable booties in "used" bag at same location you put them on. Move on to the next home.

Inspection hazards

Tracking

- One of the biggest hazards with this initiative involves tracking mercury through homes while conducting your inspection.
- As you enter the customer's home, inspect the doorjamb (you may even want to get in the habit of stepping over the jamb) for the presence of mercury, which tends to accumulate there.
- If you observe anything that you suspect may be mercury, STOP in your tracks. Check the soles of your shoes for any shiny spots before backing out of the area the same way you entered.
- If you discover that you have tracked through elemental mercury, STOP in your tracks. Contact your team leader via Nextel and hold your position until they arrive.
- Always dispose of your booties properly if there is any chance that they
 have come into contact with elemental mercury.

False positives

- There are other substances that you may come across while conducting your inspections that look similar to elemental mercury.
- Common household items that may appear similar to mercury in the way they shimmer in your flashlight beam include silver solder and metal shavings.
- We want to be overly cautious in conducting these inspections, so the moment you see anything that may be mercury you should assume that it is mercury and proceed accordingly.

Communication guidelines

Customer contact guidelines

- Address customer concerns in a courteous manner at all times.
- If a customer refuses entry to their home, apologize for the inconvenience and move on.
- You are being asked to perform your duties in a timely manner so if a
 customer desires a large amount of your time: apologize, refer them to
 your team leader and move on.
- If a customer accompanies you as you perform the visual inspection, verbally describe what you are looking for and what you are seeing as the inspection is taking place. This may answer questions they have and help to convince them that we are placing their safety first.
- If a customer seems agitated at any point: offer to leave information for them to look over, refer them to your team leader and move on to the next home.
- Call your team leader or instruct the customer to call the special mercury information line should a question come up that you are unable to answer.
- If mercury is detected in a customer's home, inform them that follow-up action will take place that same day.
- If mercury is not detected in the home, do not make time frame promises
 to customers. Inform them that we are working as quickly as possible on
 this initiative and that they will be contacted as soon as possible if a
 follow-up screening is needed.

Media contact guidelines

- Under no circumstances are you to make comment to any media that you may encounter.
- If a member of the media approaches you, politely inform them that you
 are out to perform a job and that you would be happy to refer them to
 someone who can answer their questions if they would like you to do so.
- The media may request to enter a home with you to document the
 inspection procedure. If this happens, politely inform them that entering
 the home accompanied by media is against Nicor Gas policy and that
 you would be happy to refer them to someone who can answer their
 questions if they want to discuss it further.
- Members of the media may pose as neighborhood residents in an effort
 to get you talking. If anyone approaches you, politely inform them that
 you are out to perform a job and that if they are residents of the
 neighborhood you will get to their home as soon as possible to inform
 them of the inspection procedure.

Communication guidelines, continued

Sample customer dialogues

The table below lists some sample dialogues that you might find useful in explaining your findings to customers.

	Situation	Sample dialogue
	You find what may be mercury in the customer's home	I see some evidence here that we'd like to have an environmental crew come to your home and take a closer look. I'll make a call, and they'll contact you today. For the time being, I have covered the substance with a mercury suppressant powder. Should the substance turn out to be mercury, this powder will eliminate the vapors, which are the primary method of exposure. I'd like you to keep everyone out of the area and keep the door and vents closed until the environmental crew has a chance to get here and gather some more information. Are there any questions that I can answer for you? Here's some information that might help (give handouts). Thank you for your time, and as I said, you'll be hearing from someone today.
•	You don't find any signs of mercury in the customer's home. Members of the customer's family frequently spend time in the area around the old meter set.	From my initial inspection, I don't see anything that would cause us any concern. But since you seem to be using the area frequently and have people in and out, we may decide to have another crew visit you and screen the area with instruments depending on what we discover with further research into the situation. As I said, at this point you don't have anything to worry about. Are there any questions that I can answer for you? Here's some information that might help (give handouts). Thank you for your time today, and as I said, you may be hearing from us again depending on what our research into the situation turns up.
	You find evidence that the customer's home is currently or was at one point equipped with an outside mercury regulator.	I have been able to find evidence that strongly supports the fact that your home is/was equipped with a mercury regulator, but that the regulator was located outside. I can say with relative certainty that, with this kind of arrangement, you've never had a mercury regulator inside your home. At this point, you don't anything to worry about. Are there any questions that I can answer for you? Here's some information that might help (give handouts). Thank you for your time today, and if you have any further questions please feel free to contact us.